

DERWENT-ACC-NO: 1988-255069

DERWENT-WEEK: 198836

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**TITLE:** Solder ball for semiconductor chip - has height increased so that stress caused by difference in thermal expansion between chip and substrate is minimised

PATENT-ASSIGNEE: ANONYMOUS [ANON]

PRIORITY-DATA: 1988RD-0291011 (June 20, 1988)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE
PAGES	MAIN-IPC	
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INT-CL (IPC): H01L000/01

ABSTRACTED-PUB-NO: RD 291011A

**BASIC-ABSTRACT:** A substrate has a solder dam (F) over a substrate conductor.

(G). The chip pad site substrate conductor (G) is then tinned with a low

temperature solder alloy (A) to form the base for a chip pad solder column.

Next, a high melt solder alloy (B) is evaporated or electroplated on top of the tinning solder (A) to form a solder column (ABA). Finally, another layer of low melt solder alloy (A) is evaporated or electroplated on top of the solder column (ABA) to form solder column (ABA').

The composite structure is reflowed at chip joining time with a temperature appropriate for low melting solder (A) but below that of the high melt temperature of solder (B). The second alloy (B) retains its geometry and, therefore, the height of the column is retained. Also, by virtue of the lower

joining temperature used the chip's solder ball (D), which is also composed of the high melt solder alloy, retains its geometry.

CHOSEN-DRAWING: Dwg.1/1

TITLE-TERMS:

SOLDER BALL SEMICONDUCTOR CHIP HEIGHT INCREASE SO STRESS  
CAUSE DIFFER THERMAL  
EXPAND CHIP SUBSTRATE MINIMISE

DERWENT-CLASS: U11

EPI-CODES: U11-D03B3;

SECONDARY-ACC-NO:

Non-CPI Secondary Accession Numbers: N1988-193649

